FOUNDATION RECOMMENDATIONS

WBS NO. 45353.1.23

TIP NO. BD-5107V

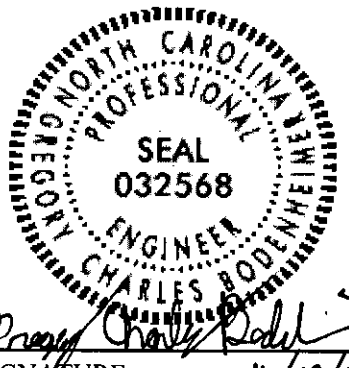
COUNTY Rockingham

STATION 13 + 46.50 -L-

DESCRIPTION Bridge No. 81 over Lick Fork Creek on SR 2565 (Lick Fork Creek Rd.)

	INITIALS	DATE
DESIGN	GCB	11/9/12
CHECK	DLT	11/13/12
	ENW	11/13/12

SEAL



SIGNATURE 11/13/12

	STATION	FOUNDATION TYPE	FACTORED RESISTANCE	FOUNDATION TYPE
END BENT 1	12 + 89.00 -L-	Cap on HP 12 x 53 Steel Piles	100 Tons/Pile	Bottom of Cap Elev. = 483.30 ft Average Pile Length = 30 ft Number of Piles = 5
BENT 1	13 + 59.00 -L-	36 inch Diameter Drilled Piers	400 Tons/Pier	Bottom of Cap Elev. = 483.80 ft Point of Fixity Elevation = 462.50 ft Tip No Higher Than Elevation = 460.00 ft Number of Piers = 3
END BENT 2	14 + 04.00 -L-	Cap on HP 12 x 53 Steel Piles	75 Tons/Pile	Bottom of Cap Elev. = 484.10 ft Average Pile Length = 20 ft Number of Piles = 5

Foundation Recommendation Notes on Plans

1. For piles, see Section 450 of the Standard Specifications.
2. Piles at End Bent No. 1 are designed for a factored resistance of 100 tons per pile.
3. Piles at End Bent No. 2 are designed for a factored resistance of 75 tons per pile.
4. Drive piles at End Bent No. 1 to a required driving resistance of 170 tons per pile.
5. Drive piles at End Bent No. 2 to a required driving resistance of 125 tons per pile.
6. For drilled piers, see Section 411 of the Standard Specifications.
7. Drilled piers at Bent No. 1 are designed for a factored resistance of 400 tons per pier. Check field conditions for the required tip resistance of 130 tsf.
8. Install drilled piers at Bent No. 1 to a tip elevation no higher than 460 ft and with the required tip resistance.
9. Permanent steel casings are required for drilled piers at Bent No. 1. Do not extend permanent casings below elevation 466 ft without prior approval from the engineer.
10. The scour critical elevation for Bent No. 1 is elevation 465 ft. Scour critical elevations are used to monitor possible scour problems during the life of the structure.
11. CSL tubes are required and CSL testing may be required for drilled piers. The engineer will determine the need for CSL testing. For CSL testing, see Section 411 of the Standard Specifications.

Foundation Recommendation Comments

1. Please advise our office, if the factored resistance is less than the maximum factored axial load.
2. The average factored axial load at End Bent No. 1 is 97 tons per pile.
3. The average factored axial load at End Bent No. 2 is 74 tons per pile.
4. The maximum factored axial load at Bent No. 1 is 400 tons per pier.
5. The design scour elevation at Bent No. 1 is 467 ft.
6. Sub Regional Tier Bridge approach fills are required at End Bents No. 1 and 2.
7. 1.5:1 (H:V) slope for end bents with Class II rip rap to berm is ok.
8. No waiting period is required before beginning any work for end bent construction after completion of the embankment at each end bent.

PILE PAY ITEMS

(Revised 8/15/12)

WBS ELEMENT 45353.1.23 DATE 11/09/12

TIP NO. BD-5107V DESIGNED BY GCB

COUNTY Rockingham CHECKED BY ENW

STATION 13 + 46.50 -L-

DESCRIPTION Bridge No. 81 over Lick Fork Creek on SR 2565 (Lick Fork Creek Rd.)

NUMBER OF BENTS WITH PILES

NUMBER OF PILES PER BENT

NUMBER OF END BENTS WITH PILES

NUMBER OF PILES PER END BENT

Only required for "Predrilling for Piles" & "Pile Excavation" pay items

Bent # or End Bent #	PILE PAY ITEM QUANTITIES						
	Steel Pile Points (yes/no)	Pipe Pile Plates (yes/no/maybe)	Predrilling For Piles (per linear ft)	Pile Redrives (per each)	Pile Excavation (per linear ft)		PDA Testing (per each)
					In Soil	Not In Soil	
End Bent 1	No						
End Bent 2	No						
TOTALS			0	0	0	0	

Notes:

Blanks or "no" represent quantity of zero.

If steel pile points are required, calculate quantity of "Steel Pile Points" as equal to the number of steel piles.

If pipe pile plates are or may be required, calculate the quantity of "Pipe Pile Plates" as equal to the number of pipe piles.

Show quantity of "PDA Testing" on the plans as total only.

If quantity of "PDA Testing" is 3 or less, reference "Pile Driving Criteria" provision in PDA notes on plans and include "Pile Driving Criteria" provision in the contract.

DRILLED PIER PAY ITEMS

(For LRFD Projects - Revised 8/15/12)

WBS ELEMENT 45353.1.23 DATE 11/9/12

TIP NO. BD-5107V DESIGNED BY GCB

COUNTY Rockingham CHECKED BY DLT

STATION 13 + 46.50 -L-

DESCRIPTION Bridge No. 81 over Lick Fork Creek on SR 2565 (Lick Fork Creek Rd.)

NUMBER OF BENTS WITH DRILLED PIERS 1

NUMBER OF DRILLED PIERS PER BENT 3

NUMBER OF END BENTS WITH DRILLED PIERS

NUMBER OF DRILLED PIERS PER END BENT

Bent # or End Bent #	DRILLED PIER PAY ITEM QUANTITIES				
	Permanent Steel Casing For 36 Dia. Drilled Pier (yes/no/maybe)	36 Dia. Drilled Piers Not In Soil (per linear ft)	SID Inspections (per each)	SPT Testing (per each)	CSL Testing (per each)
Bent 1	Yes	18			
TOTALS		18	0	0	1

Notes:

Blanks or "no" represent quantity of zero.

If drilled piers not in soil are required, calculate quantity of "36 inch Dia. Drilled Piers in Soil" as the difference between the total drilled pier length and the "36 inch Dia. Drilled Piers Not in Soil" from the table above. If there is none or zero quantity for drilled piers not in soil in the table above, calculate quantity of "36 inch Dia. Drilled Piers" as the total drilled pier length and do not use the "36 inch Dia. Drilled Piers in Soil" pay item.

If permanent steel casing is or may be required, calculate quantity of "Permanent Steel Casing for ____ Dia. Drilled Pier" as the difference between the ground line or top of drilled pier elevation, whichever is higher, and the elevation the permanent casing can not extend below from the foundation recommendations.

If "SID Inspections", "SPT Testing" or "CSL Testing" may be required, show quantities of these pay items on the plans as totals only. If "SID Inspections", "SPT Testing" or "CSL Testing" is required, show quantities of these pay items on the plans for each bent or end bent.

The number of CSL tubes required per drilled pier is equal to one tube per foot of design pier diameter with at least 4 tubes per pier. Calculate the length of each CSL tube as the total drilled pier length plus 1.5 ft.